Electrodeposited Noble Metal Oxide Nerve Electrodes

Grant 5R44NS042950-04 | Period of support: 01/2002 – 04/2007

Challenge/Problem:

To develop low impedance, high charge capacity coatings for recording and stimulation electrodes used in prostheses of the nervous system and in electrical therapies for neurodegenerative disorders.

Approach:

Thin films of electro-active iridium oxide are electrodeposited onto noble metal electrodes to reduce impedance and enhance charge-injection capabilities. A chronic study of the biocompatibility and long-term recording and stimulation capabilities of iridium oxide coated metal electrodes in rabbit cortex is being conducted.

Business Name and Point of Contact:

Company: EIC Laboratories, Inc.
111 Downey St.
Norwood, MA 02062

Contact: Stuart F. Cogan
1.781.769.9450

Progress:

Initial 60-day histologic assessment of iridium oxide coated electrodes and uncoated iridium metal shafts shows no adverse response. *In vitro* charge-injection limits have been determined and 4-month pulsing studies conducted.

Current/Near Term Products:

Iridium oxide coating services are provided to researchers and companies developing neuroprosthetic devices for sensory deficits, epilepsy, tremor, behavioral disorders, and cardiac pacing.

Future Plans:

To complete a chronic recording and stimulation assessment of electrodeposited iridium oxide electrodes in rabbit cortex. To develop a low-cost multi-electrode electrodeposition capability suitable for production coating of rigid and flexible leads and multi-electrode arrays.

Keywords: electrode; nerve; recording; stimulation; iridium oxide